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RESEARCH & DEVELOPMENT SUBCOMMITTEE
107TH CONGRESSIONAL SESSION

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Mr. Hostettler
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Mr. Snyder
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Aloha and good morning Chairman Hunter, Ranking Member Abercrombie, and fellow Representatives. My name is Nick Susner. I am the President and CEO of Science and Technology International®, a twenty year old high technology firm based in Honolulu, known as, STI. I am also the co-founder of the Pacific Disaster Center on Maui.

I want to first begin by thanking you for your time today and for considering what may be a significant enhancement to submarine operational safety that is under development at STI.

STI develops innovative solutions to better equip our warfighters. We work hand-in-hand with "users" in the development process to meet their exact needs. We rapidly field and

fully support deployable integrated systems that the warfighter can operate and evaluate. Recently, our state-of-the-art technology has focused on electro- optics as a tool for Anti-Submarine Warfare. We are a small company, able to quickly develop innovative solutions. STI actually designed built, fleet certified and flew our LASH-ASW system within 18 month after receipt of contract. Our LASH Mine Countermeasures system similarly has participated in Fleet Battle Exercise Hotel in the Gulf Coast and as recently as last week in exercise Kernal Blitz off Camp Pendleton. STIs system produced excellent results detecting mines under very low visibility conditions in the surf zone. We also develop surveillance and reconnaissance hardware. This technology includes expert knowledge ranging from data processing, optics, computer sciences, electronics, and systems engineering. STI is a technology incubator whose goal is to further enhance the quality of life by transferring warfighter technology to medical and other humanitarian efforts.

We would like to discuss our how our technology and unique location can have a major impact on Warfighter Readiness and Force Protection. However, in view of the limit on time we have elected to highlight how our technology can be used for Submarine Collision Avoidance.

Sub Collision Avoidance System (SCAS)

Science & Technology International® (STI) would like to outfit the U.S. Navy with technology that could dramatically reduce the chances of another ocean tragedy like the USS Greeneville ramming into the Ehime Maru on February 9, 2001.

Unfortunately, what occurred on that fateful day 9-miles off of Oahu is likely not an isolated event and serves as a significant reason why we need to outfit our Navy submariners with more tools to perform their job safely and accurately.

Let me begin by sharing with you that STI currently has a LASH-ASW system. It stands for **L**ittoral **A**irborne **S**ensor-**H**yperspectral **A**nti-**S**ubmarine **W**arfare. It's a system that can find submarines and mines. The system is installed on the wing pylon of a P3-C Orion maritime patrol aircraft. The LASH system automatically alerts the operator and provides a near real-time picture of the submarine. We at STI were just written up in the globally recognized *Aviation Week & Space Technology* for having "**the most developed hyperspectral system in the world."** I'm pointing this out to you, to demonstrate how advanced our technology is and how it can help in preventing another submarine tragedy.

Periscopes and sonars have been the primary source of surface surveillance for submarines in the past. However, as seen with the Ehime Maru these often do not provide sufficient warning. This LASH picture actually can classify the submarine for the operators in many instances. The operators are excited about having an actual picture rather than an interpreted sonar or magnetic triangulation. It is obvious that having these real pictures makes detection a reality for the user. The same would be true of having an optical picture of a surface target. This is what our technology would bring to the user.

The STI Submarine Collision Avoidance System (SCAS) would provide the user with an actual picture of what is in the path of the submarine. STI is currently working on a training package for submarines to track them non-acoustically while at depth from an aerial platform. This system is planned to be housed forward of the pressure hull just behind the sonar array in an existing hatch. It has the necessary power and communications hull penetrations available requiring very little modification to the submarine. The optical sensor would be mounted looking upward and be stabilized, be able to pan, tilt, zoom and focus. If a submarine was 75-feet deep and in the direct path of a boat or object, the sensor could see more than 300 feet ahead, depending on water quality. The system could provide a 23 second warning of an impending collision including maneuvering cues. If a submarine was running at 75-feet, and not directly in the path of a boat or submarine, STIs sensor could see more than 1,000 feet ahead, a sixty second warning. SCAS would look up at the surface using technology similar to our current LASH system. Using an intensified camera the submarine can see a direct path image using Snells law to provide a refractive image of what is on the surface. STI's advanced processing group has developed software to take advantage of this "window" to the surface. This image processing is done in real-time and will alert to submarine commander in sufficient time to maneuver away from any potential surface contacts.